THE UNIVERSITY OF TEXAS AT AUSTIN Date: 9/4/13

RECOMMENDATION FOR CHANGE IN ACADEMIC RANK/STATUS

Name: Andreas Gerstlauer Present Rank: Assistant Professor

Years of Academic Service *(Include AY 2013-14 in each count)*:

At UT Austin since: 9/1/08 (m/d/y) In present rank: 6 (# of years); In Probationary Status (TT **only**): 6 (# of years)

Department: Electrical and Computer Engineering

Other: _____

College/School: Cockrell School of Engineering

Recommended action[1]:

By Budget Council/Executive Committee: Promote to Associate Professor

Vote[2] for promotion 26; Against 0; Abstain 0; Absent 8

By Department Chair: Promote to Associate Professor

By SBS Executive Committee: _____

Vote[2] for promotion _____; Against _____; Abstain _____; Absent _____

By Director: _____

By College/School Advisory Committee: Promote

Vote[2] for promotion 7; Against 0; Abstain 0; Absent 0

By Dean: Promote

Administrative Action: Promote to Associate Professor

Date Action Effective: September 1, 2014
(To be submitted to the Board of Regents as part of the annual budget.)

By: _____ Date: 12/16/2013
For the President

[1]See "Chart of Recommended Actions" for eligible recommended actions applicable to specific conditions and administrative levels.

[2]All votes are to be recorded as For, Against, or Abstain. (Note: unexplained abstentions will be interpreted as weak negative votes by the President's Committee.) Also record number of absent eligible voting members.

EVPP/4.13

EXHIBIT
P's 172

Dean's Assessment
Andreas Gerstlauer
Department of Electrical and Computer Engineering

Andreas Gerstlauer received his Vordiplom (BS) and Dipl-Ing (MS) in Electrical Engineering from the University of Stuttgart, Germany in 1991 and 1997, respectively, and an MS and Ph.D. in Information and Computer Science from the University of California, Irvine in 1998 and 2004, respectively. He continued at UC Irvine as an assistant researcher until he was appointed an assistant professor at UT Austin in 2008.

Ten external letters were submitted as part of the promotion dossier, five were suggested by the candidate and five were selected by the budget council. Eight reviewers are faculty at US universities, one is a faculty member at a European university, and one is a senior technical staff member in industry. One reviewer is a member of NAE.

Teaching
Dr. Gerstlauer has taught one undergraduate course and two graduate courses: EE 319K, *Introduction to Embedded Systems* (four times); EE 382V *Embedded System Design and Modeling* (four times); and EE 382V *System on a Chip* (three times). His average overall instructor/course ratings for these courses are 4.05/3.78, 4.20/3.55, and 4.33/3.87 respectively. Dr. Gerstlauer's ratings compare favorably with the weighted average/median instructor ratings for assistant professors in the Department of Electrical and Computer Engineering over the last five years (4.06/4.08 for undergraduate courses) and (4.22/4.36 for graduate courses).

In collaboration with Professors Yerraballi and Valvano, Dr. Gerstlauer is developing a massively open online course (MOOC) based on EE 319K. This course will be delivered through the edX consortium during the 2014 spring semester and will include a physical hardware laboratory component. This is believed to be the first time that a MOOC will include a laboratory component using physical hardware, as opposed to simulations of hardware.

Research
Dr. Gerstlauer's research is in the area of system-level design of embedded computer systems, with a focus on design automation methodologies, technologies and tools. His primary focus has been on tools for modeling systems-on-a-chip that are embedded in a variety of products, from consumer electronics to civilian spacecraft and military systems. Dr. Gerstlauer's methods and tools provide assistance for teams of designers in making key decisions and automating the design of the entire computing system based on the design decisions.

At UT, Dr. Gerstlauer has published nine archival journal papers (eight in print and one accepted), 32 peer-reviewed conference papers (these conferences have acceptance rates in the range of 17 to 34%). His career totals are 12 archival journal papers, 54 peer-reviewed conference papers, and three co-authored books.

Dr. Gerstlauer's extramural research funding in rank includes nine grants and four gifts, totaling nearly $2.2 million (his share is $1.4 million). The research grants have been funded by federal agencies (National Science Foundation, DARPA, and Army Research Office) and industrial groups (Semiconductor Research Corporation, Samsung). He is the principal investigator on ten of these research grants/gifts.

The letters from external reviewers are consistently strong. Dr. Gerstlauer's specific contributions to the field and the impact of his work are well documented.

Dr. Arvind (Massachusetts Institute of Technology, NAE) writes, "There is a good balance between *tools* versus *design* papers. For me Andreas['] work would lack credibility without the design papers. The topics covered by these papers are of central concern in ESL [embedded computer systems]. I also found the architecture modeling paper and the OS paper together offering some creative insights in a difficult modeling question."

Dr. Nikil Dutt (University of California, Irvine) writes, "After joining UT Austin, Dr. Gerstlauer has continued to build on this momentum by creating abstractions for RTOS modeling for heterogeneous multi-core platforms, hardware-dependent software design methodologies, and transaction-level modeling for efficient exploration of communication architectures. His recent work on speeding up system-level simulation and embedded software modeling already show early signs of impact both in the research arena, as well as for industrial practitioners."

Dr. Milos Ercegovac (University of California, Los Angeles) writes, "These works are typical of his research: there is a clear, original idea, a good technical depth, and strong experimental results. Prof. Gerstlauer and his collaborators made notable contributions in identifying key principles of electronic system design, covering both hardware and software aspects."

Dr. Peter Hofstee (IBM Austin Research Laboratory) writes, "… what most impresses me about Dr. Gerstlauer's work, is on the one hand a rigorous drive for the abstraction and elegance one expects of academic research with lasting value, and at the same time a high degree of completeness and realism that allows his research to be readily applicable. It is unusual to see this span of interest and capability within a single researcher."

Dr. Martin Wong (University of Illinois at Urbana-Champaign) writes, "… Andreas has established a diverse and high-quality research program that is certainly on par with if not better than any of his peers'." "… Andreas is highly visible, well known and respected in the broader automation community."

Advising and Student Mentoring

At UT Austin, Dr. Gerstlauer has graduated [redacted] co-supervised PhD students, [redacted] MS thesis students [redacted] and five MS report students. He is currently supervising or co-supervising seven PhD students and [redacted] MS students. He has also served as the faculty advisor to several upper-division undergraduate students in Computer Engineering and Embedded Systems tracks.

University Service

Dr. Gerstlauer has served on several committees within the Department of Electrical and Computer Engineering. He has been actively engaged with the undergraduate curricula and with graduate student recruiting and admissions. He also served on the faculty search committee one year.

Professional Service

Dr. Gerstlauer is an associate editor for *Transactions on Embedded Computing Systems* within the Association for Computing Machinery (ACM) and he serves on the editorial board for *Design Automation for Embedded Systems* (SpringerLink). He has also served on the technical program committee for several technical conferences.

Other Evidence of Merit or Recognition
In 2013, Dr. Gerstlauer's work [redacted]

Overall Assessment
Dr. Gerstlauer has developed a strong research program with a high level of publication productivity; he has secured a sustainable level of research funding from federal and corporate sources; and the quality and impact of his research are highly regarded by the external reviewers. His teaching contributions at the undergraduate and graduate level are strong.

Accordingly, I recommend promotion of Andreas Gerstlauer to associate professor with tenure.

Sharon L. Wood, Interim Dean
2 November 2013

ANDREAS GERSTLAUER
Statistical Summary for In-Rank

Peer-reviewed Journal Publications	9
Peer-reviewed Conference Publications	32
Corresponding Author on Peer-Reviewed Publications	4 (3 invited)
Total Citations of all Publications (career)*	2135
h-index (career)*	21
Total Research Funding	$2.17M
Candidate Share Research Funding	$1.39M
Total Number of Grants/Contracts Received	13
Number of Grants/Contracts Received as PI	10
PhD Students Completed †	[redacted]
MS Students Completed †	7.5
PhD Students in Pipeline (as of 09/2013) †	6
MS students in Pipeline (as of 09/2013) †	[redacted]
Courses Taught	11
Weighted Average UG Course GPA	3.04
# of Students Taught	409
Average Instructor Evaluation UG	4.10
Average Instructor Evaluation Grad	4.23
Average Course Evaluation UG	3.74
Average Course Evaluation Grad	3.79
Teaching Awards	0
Student Organizations Advised	2
Undergraduates Supervised	11
Department Committees and Service	9
Cockrell School Committees	0
University Committees and Service	0
Journal Editorial Boards	2
Journal Reviews/Number of Journals	34 / 13
Symposia Organized	4
Invited Talks	33

* Source:
- ☒ Publish or Perish
- ☐ ISI Web of Knowledge

† Counted as 1 if sole advisor, 0.5 if co-advised

Budget Council Assessment of Teaching Performance for Faculty Promotion Candidate Andreas Gerstlauer

This report was prepared by Budget Council Members Professors Jonathan Valvano and Yale Patt, and is their personal evaluation of Professor Andreas Gerstlauer's teaching record.

Principal Areas of Teaching

Dr. Gerstlauer's principal area of research and teaching is in system level design of embedded systems. This involves the holistic design of both hardware and software to solve a domain specific computer problem, and requires applying engineering tradeoffs in accomplishing this goal. To that end, he teaches both graduate and undergraduate courses. He has focused his undergraduate teaching on EE319K, a core freshman course on hardware/software interfacing, which includes both software development and system integration of hardware and software components. At the graduate level, he has focused his attention on two courses, a new graduate course in "Embedded System Design and Modeling," (ESDM) which he developed and introduced at UT, and an existing lab-based course, "System on a Chip," (SoC) which he took over and overhauled. EE319K is required of all freshman majors in electrical and computer engineering. It is the first course wherein the student is faced with writing programs that interface the hardware and the software of an embedded system. The two graduate courses are fundamental for students wishing to either pursue a PhD in embedded systems architecture or assume leadership positions on design teams in industry.

Teaching Evaluation Procedures and Measures

The ECE department employs two teaching evaluation procedures: Course Instructor Surveys and peer evaluation. The course instructor surveys are conducted in the last three weeks of the semester in every course. A peer evaluation is made by a professor after a visit to the classroom. The time and date of the visit are agreed to beforehand so that the visit does not catch the instructor by surprise.

Summary of Course Instructor Surveys

The primary indicator on the Course Instructor Surveys used to evaluate teaching performance is the Overall Instructor Rating. Dr. Gerstlauer's evaluations are shown in the table below.

Class	Level	Semester	Enrollment	Instr. Rating*	Course Rating
EE319K	Undergraduate (freshmen, required)	Spring '09	38	4.1	4.2
		Spring '11	84	3.7†	3.3†
		Spring '12	73	4.3	3.7
		Spring '13	71	4.1	3.9
EE382V ESDM	Graduate (introductory)	Fall '08	19	4.4	3.8
		Fall '09	26	3.8	3.5
		Fall '10	15	4.1	3.9
		Fall '11	14	4.5	3.9
EE382V SoC	Graduate (introductory)	Spring '10	18	4.6	4.3
		Spring '11	10	4.2	3.6
		Fall '12	41	4.2	3.7

* Average/median/standard deviation of instructor ratings for ECE tenured/tenure-track faculty is 4.06 / 4.08 / 0.42 for undergraduate courses, 4.22 / 4.36 / 0.37 for graduate courses, and 4.12 / 4.04 / 0.29 for EE319K.
† An electronic course evaluation was performed, but only 26 responses were collected.

The table lumps his teaching performance into three sections, one section for each of the three courses he has taught.

It is clear that the students consider Dr. Gerstlauer an outstanding teacher. Of the eleven classes he has taught, nine of them are ranked at 4.1 or higher. Two classes were ranked below 4.0, the freshman course EE319K in Spring, 2011 (3.7), and the graduate Embedded Systems Design and Modeling course in Fall, 2009 (3.8). Given the overwhelming positive evaluations in all three courses, we see the two courses below 4.0 as outliers, and hence, we do not have reason for concern.

In fact, one of the outliers, the 3.7 evaluation for EE319K in Spring, 2011, can be explained easily. The course was evaluated electronically with only 30% of the students in the class participating in the evaluation. Normally, we use paper evaluations, and normally a much higher percentage of the students in each class participate.

Summary of Peer Evaluation

Dr. Gerstlauer's classes were evaluated by both of us, Professor Jonathan Valvano performing the peer evaluation in March, 2012, and Professor Yale Patt performing the peer evaluation in March, 2013. Both of us rank Dr. Gerstlauer as an outstanding teacher, citing his clear explanations, comfortable manner in the classroom, and his effective use of both the blackboard and technology in getting his points across. These evaluations are included in the promotion packet.

Comparison with other instructors in the ECE Department

EE319K is a very demanding, but critical, course required of all ECE majors during their freshman year. As such, the ECE department has assigned the course to instructors who are known for being conscientious and excellent teachers. Not surprising, even though the course requires a lot of effort from students, it is a popular freshman course and routinely receives positive evaluations.

Listed below are the CIS evaluations for the six instructors who have been teaching the course since 2009.

This is the most appropriate course to use as a metric to compare Professor Gerstlauer with his peers for two reasons: (1) it is the undergraduate course that he has focused on, and (2) the sample size is large enough (1744 students, 29 classes) to provide meaningful data.

His CIS instructor average numbers are right at the overall average of 4.1. His CIS course numbers are slightly below the overall average of 3.9. His class GPA is slightly lower than the overall average GPA of 3.07, suggesting there is no bias in evaluation scores caused by perceived grade expectations. This data places him right at the average among the excellent instructors teaching this course.

Gerstlauer		Professor 1		Professor 2	
CIS Instructor	4.1	CIS Instructor	3.9	CIS Instructor	3.7
CIS Course	3.8	CIS Course	3.9	CIS Course	3.8
GPA	3.03	GPA	3.13	GPA	3.00
Class Size	59	Class Size	41	Class Size	53
Professor 3		Professor 4		Professor 5	
CIS Instructor	4.1	CIS Instructor	4.2	CIS Instructor	4.5
CIS Course	3.9	CIS Course	4.0	CIS Course	4.0
GPA	3.19	GPA	3.04	GPA	3.05
Class Size	50	Class Size	68	Class Size	67

Table. CIS/GPA data since 2009 of all EE319K instructors (source. CIS, www.utexas.edu). Professor Gerstlauer's data are highlighted.

Massively Open Online Course (MOOC)

The University of Texas at Austin will deliver nine online classes in the MOOC format during the 2013-2014 academic year. EE319K will be one of these pilot classes, with a scheduled launch in Spring 2014. Professor Gerstlauer is one of three faculty (along with Ramesh Yerraballi and Jonathan Valvano) involved in the design and delivery of this online class. In particular, his role to date has been overall course design, selection of topics for inclusion, and review of teaching materials. Professor Gerstlauer's role has been restricted over the summer as he focuses on his promotion package. During the fall semester leading up to the Spring 2014 launch he will take a more active role in design and creation of educational content.

Balance Between Graduate and Undergraduate Teaching

Dr. Gerstlauer's teaching load was two courses per year during his first two years on the ECE faculty (2008-09, 2009-10), three courses per year (2010-11, 2011-12), and two courses per year, starting in Fall, 2012. This is consistent with ECE's normal policy toward teaching loads, wherein new assistant professors were assigned two courses per year during their first two years on the faculty, and three courses per year for research active faculty after that. Starting in Fall, 2012, all research active faculty have been assigned two courses per year.

Dr. Gerstlauer has achieved a commendable balance between undergraduate and graduate teaching. He has taught the freshman course four times and his two graduate courses a total of seven times.

Individual Instruction

Dr. Gerstlauer has an excellent record in the area of individual instruction, and has gone out of his way to do more than his share when it comes to taking on responsibilities involving individual instruction.

Dr. Gerstlauer has been the co-advisor of [redacted] students who have completed their PhDs at UT. He has also been the co-advisor of two students who completed their PhDs elsewhere. He also served on the PhD dissertation committees of eight students who completed their PhDs at The University of Texas, and two students who completed their PhDs at universities in Germany. He is currently advising five PhD students at UT as the sole advisor, plus [redacted] additional PhD students as co-advisor.

Dr. Gerstlauer has also supervised [redacted] completed MS theses and 5 MS reports.
He is a member of the PhD dissertation committees of ten PhD students at UT. He is a member of the MS thesis committees of [redacted] MS students at UT, one MS student at UC Irvine, and three MS students at universities in Germany. He is a member of the MS Report committee of [redacted] MS students at UT.

The ECE department has a graduation requirement wherein every student must participate in a senior design project. Projects are done by four or five person teams and take two semesters to accomplish. The members of each team meet weekly throughout the two semesters with their faculty mentor. Dr. Gerstlauer has mentored two undergraduate senior design projects.

Teaching Portfolio

Dr. Gerstlauer has prepared an 8-page teaching philosophy statement which expresses in depth his attitude toward teaching and his views on what it takes to do effective teaching. He discusses how his views have evolved over the time he has been teaching.

Dr. Gerstlauer has also prepared a comprehensive portfolio of the teaching materials used in his three courses. They are included in this promotion packet.

Conclusion

In summary, while in rank as an Assistant Professor at UT Austin, Dr. Gerstlauer has delivered very high quality teaching at all student levels, both in formal classes and in supervision of individual work. He is well deserving of tenure and promotion to the rank of Associate Professor.

Respectfully,

Jonathan W. Valvano
Professor of Electrical and Computer Engineering, and
Engineering Foundation Centennial Teaching Fellow in Electrical Engineering #1

Yale N. Patt
Professor of Electrical and Computer Engineering,
Ernest Cockrell, Jr. Centennial Chair in Engineering, and
Distinguished University Teaching Professor

Grants and Contracts Awarded while in Rank

Co-Investigators	Title	Agency	Project Total	Candidate Share	Grant Period
-	Core Technology Development for System Simulation including Network	Samsung, Korea	$149,020	$149,020	6/1/2013-12/31/2013
-	Automated Design Space Exploration and Optimization of DSP Systems	National Instruments	$60,000	$60,000	8/1/2012-7/31/2013
Robert Heath (PI, ECE)	Interference Alignment in Distributed Environments	Army (ARO)	$99,980	$49,990	9/1/2012-8/31/2013
Lizy John, (Co-PI, ECE)	Multi-dimensional Modeling, Design and Exploration of Heterogeneous Multicore SoCs	SRC	$345,000	$173,000	8/1/2012–7/31/2015
Robert Heath (PI, ECE)	Interference Alignment in Distributed Environments	DARPA	$99,344	$49,672	9/1/2011-8/31/2012
-	Towards Enabling Full-Cell Biochemical Network Simulations	UT Austin, SRA	$20,000		7/1/2011-8/31/2011
Robert van de Geijn (Co-PI, CS)	SHF: Small: Algorithm/Architecture Co-Design of Low Power and High Performance Linear Algebra Compute Fabrics	NSF	$499,919	$249,959	6/1/2012-5/31/2015
Michael Orshansky (Co-PI, ECE)	SHF: Small: Formal Synthesis of Low-Energy Signal Processing Systems Relying on Controlled Timing-Error Acceptance	NSF	$449,614	$224,807	9/1/2010-8/31/2013
-	Automatic Platform Model Calibration and Tuning	SRC	$254,337	$254,337	8/1/2010-7/31/2013
			$1,977,214	$1,230,785	